

## **COVER PAGE FOR TEST REPORT**

Test Item Description:	Home Plug Device
Model/Type Reference:	MS-6821
Rating(s):	100 - 240 Vac, 47 - 63 Hz, 0.1 A.
Standards:	IEC60950, Third Edition (1999)
Applicant Name and Address:	MICRO-STAR INTERNATIONAL CO LTD 69 LI-DE ST CHUNG HO CITY TAIPEI HSIEN TAIWAN
Factory Location(s):	1. MICRO-STAR INTERNATIONAL CO., LTD. 488 BAN NAN ST. CHUNG HO CITY TAIPEI HSIEN 235 TAIWAN  2. MSI COMPUTER (SHENZHEN) CO., LTD. LONGMA INFORMATION TECHNOLOGY IND. PARK TANGTOU VILLAGE, SHIYAN TOWN BAO'AN DISTRICT SHENZHEN GUANGDONG CHINA
This Report includes the following parts, in addition to this cover page:	
<ol style="list-style-type: none"><li>1. Specific Technical Criteria</li><li>2. Clause Verdicts</li><li>3. Critical Components</li><li>4. Test Results</li><li>5. National Differences</li><li>6. Enclosures</li></ol>	
All applicable tests according to the above standard(s) have been carried out. Test results are valid only for the tested equipment. This Test Report can be reproduced only in whole. Amendments and corrections can be reproduced only with the original CB Test Report. Written permission from UL International Demko A/S is required if the test report is copied in part.	

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<b>TEST REPORT IEC 60950 Safety of information technology equipment</b>	
<b>Report Reference No</b>	E203413-A17-CB-1
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Date of issue	2003-09-25
CB Testing Laboratory	UL International Demko A/S
Address	Lyskaer 8, 2730, Herlev, Denmark
Testing location/procedure	CBTL <input checked="" type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address	UL International Demko A/S, Lyskaer 8, 2730, Herlev, Denmark
Applicant's name	MICRO-STAR INTERNATIONAL CO LTD
Address	69 LI-DE ST CHUNG HO CITY TAIPEI HSIEN TAIWAN
<b>Test specification:</b>	
Standard	IEC60950, Third Edition (1999)
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	I950_F/00-03
TRF originator	FIMKO
Master TRF	dated 00-02
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Test item description	Home Plug Device
Trade Mark	MSI
Model/Type reference	MS-6821
Manufacturer	SAME AS APPLICAT
Rating	100 - 240 Vac, 47 - 63 Hz, 0.1 A.
Marking Plate - Refer to Enclosure titled Miscellaneous for copy.	

**Particulars: test item vs. test requirements**

Equipment mobility .....: direct plug-in  
Operating condition .....: continuous  
Mains supply tolerance (%). ....: +6%, -10%  
Test for IT power systems .....: No  
IT testing, phase-phase voltage (V) .....: N/A  
Class of equipment .....: Class II (double insulated)  
Mass of equipment (kg) .....: 0.13 kg  
Protection against ingress of water .....: IP 20

**Possible test case verdicts:**

- test case does not apply to the test object .....: N / A
- test object does meet the requirement .....: P(Pass)
- test object does not meet the requirement .....: F(Fail)

**General remarks:**

**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by a NCB in accordance with IECEE 02.**

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

<b>General Product Information:</b>	
<b>Report Summary</b>	
All applicable tests according to the referenced standard(s) have been carried out.	
<b>Product Description</b>	
Electronic Component mounted on PWB and housed with plastic enclosure.	
<b>Model Differences</b>	
N/A	
<b>Additional Information</b>	
N/A	
<b>Engineering Consideration</b>	
The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tmra) of:	40 degree C,
The power supply means are	Direct plug-in, Pluggable A
The product is intended for use on the following systems	TN
The equipment disconnect device is considered to be	Plug
<b>Engineering Conditions of Acceptability</b>	
When installed in an end-product, consideration must be given to the following:	

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1	<b>GENERAL</b>	Pass
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1.5	<b>Components</b>	Pass	
1.5.1	Comply with IEC 950 or relevant component standard	(see appended table 1.5.1)	Pass
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.  Components not certified are used in accordance with their ratings and they comply IEC60950 and the relevant component Standard.  Components, for which no relevant IEC Standard exist, have been tested under the condition occurring in the equipment, using applicable parts of IEC60950.	Pass
	Dimensions (mm) of mains plug for direct plug-in :.	The blade configuration is in accordance with the national applicable standards.	Pass
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N).....:.	Refer to 4.3.6.	Pass
1.5.3	Thermal controls		N/A
1.5.4	Transformers	See Annex C-Transformers.	Pass
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard.	Pass
1.5.6	Capacitors in primary circuits .....		N/A
1.5.7	Double or reinforced insulation bridged by components		N/A
1.5.7.1	Bridging capacitors		N/A
1.5.7.2	Bridging resistors		N/A
1.5.7.3	Accessible parts		N/A
1.5.8	Components in equipment for IT power systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.6	<b>Power Interface</b>		Pass
1.6.1	AC power distribution systems	AC power distribution systems are classify as TN.	Pass
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD.  (see appended table 1.6.2)	Pass
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N/A
1.6.4	Neutral conductor	Class II equipment. Phase conductors separated to body by reinforced insulation.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1.7	<b>Marking and Instructions</b>		Pass
1.7.1	Power rating	Rating marking readily visible to operator. See below for details.	Pass
	Rated voltage(s) or voltage range(s) (V) .....	100 - 240 Vac	Pass
	Symbol for nature of supply for d.c. ....	AC Source	N/A
	Rated frequency or frequency range (Hz).....	47 - 63 Hz	Pass
	Rated current (A).....	100 mA	Pass
	Manufacturer's name/Trademark .....	MICRO-STAR INTERNATIONAL CO., LTD. / MSI	Pass
	Type/model.....	Home Plug Device / See Cover Page	Pass
	Symbol of Class II .....	60417-1-IEC-5172 symbol marked.	Pass
	Other symbols .....	Additional symbols may be provided when submitted for National Approval.	N/A
	Certification marks.....	UL, C-UL	Pass
1.7.2	Safety instructions	Safety instructions in English. Other languages will be provided when submitted for national approval.	Pass
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment .....		N/A
1.7.5	Power outlets on the equipment .....		N/A
1.7.6	Fuse identification.....	Evaluated as part of power supply.	N/A
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals		N/A
1.7.7.2	Terminal for a.c. mains supply conductors	Direct plug in equipment.	N/A
1.7.8	Controls and indicators		Pass
1.7.8.1	Identification, location and marking.....	No indicators, switches and other controls affecting safety provided.	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

1.7.8.2	Colours.....:	No indicators, switches and other controls affecting safety provided.	Pass
1.7.8.3	Symbols according to IEC 60417.....:		N/A
1.7.8.4	Markings using figures .....		N/A
1.7.9	Isolation of multiple power sources .....		N/A
1.7.10	IT power system	Not intended for use on IT power systems.	N/A
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language .....	Reviewed only English markings/instructions.  May be provided in other languages when the equipment will be applied for other national certificated.	-
1.7.13	Durability	The marking(s) withstood the required test.	Pass
1.7.14	Removable parts		Pass
1.7.15	Replaceable batteries		N/A
	Language .....		-
1.7.16	Operator access with a tool.....:	No operator access areas require the use of a tool.	N/A
1.7.17	Equipment for restricted access locations .....	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

2	PROTECTION FROM HAZARDS	Pass
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IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.1	<b>Protection from electric shock and energy hazards</b>		Pass
2.1.1	Protection in OPERATOR access areas		Pass
2.1.1.1	Access to energized parts	No operator access to energized parts.	Pass
	Test by inspection .....	No operator access to energized parts.	Pass
	Test with test finger .....	The test finger was unable to contact bare hazardous parts, basic insulation, or ELV circuits.	Pass
	Test with test pin .....	The test pin was unable to contact bare hazardous parts.	Pass
	Test with test probe .....	No TNV present.	N/A
2.1.1.2	Battery compartments.....		N/A
2.1.1.3	Access to ELV wiring	Internal wiring in an ELV circuit is not user accessible.	N/A
	Working voltage (V); distance (mm) through insulation .....		-
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards .....	The hazardous energy circuits can't be bridged by the test finger in a straight position.	Pass
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in the primary circuit		N/A
	Time-constant (s); measured voltage (V).....		-
2.1.2	Protection in service access areas	No bare parts operating at HAZARDOUS VOLTAGES in a service access area.	N/A
2.1.3	Protection in restricted access locations	The unit is not intended to be used in restricted locations.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.2	<b>SELV Circuits</b>		Pass
2.2.1	General requirements	SELV levels are maintained after single fault condition.	Pass
2.2.2	Voltages under normal conditions (V) .....	All accessible voltages are less than 42.4 V <sub>p</sub> or 60 V dc and are classified as SELV.	Pass
2.2.3	Voltages under fault conditions (V).....	Under fault conditions voltages never exceed 71V peak and 120Vdc and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.	Pass
2.2.3.1	Separation by double or reinforced insulation (method 1)		Pass
2.2.3.2	Separation by earthed screen (method 2)		N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N/A
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuit and all interconnected circuits separated from primary by Double/Reinforced insulation. The SELV circuit does not exceed the SELV limits under normal and fault conditions.	Pass

2.3	<b>TNV Circuits</b>		N/A
2.3.1	Limits		N/A
	Type of TNV circuits .....		-
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed .....		-
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed .....		-
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed .....		-
2.3.5	Test for operating voltages generated externally		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.4	<b>Limited Current Circuits</b>	N/A
2.4.1	General requirements	N/A
2.4.2	Limit values	N/A
	Frequency (Hz) .....	-
	Measured current (mA).....:	-
	Measured voltage (V).....:	-
	Measured capacitance ( $\mu$ F) .....	-
2.4.3	Connection of limited current circuits to other circuits	N/A

2.5	<b>Limited Power Sources</b>	N/A
	Inherently limited output	N/A
	Impedance limited output	N/A
	Overcurrent protective device limited output	N/A
	Regulating network limited output under normal operating and single fault condition	N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition	N/A
	Output voltage (V), output current (A), apparent power (VA) .....	-
	Current rating of overcurrent protective device (A):	-

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Clause	Requirement + Test	Result - Remark	Verdict

2.6	<b>Provisions for Earthing and Bonding</b>		N/A
2.6.1	Protective earthing		N/A
2.6.2	Functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		-
2.6.3.2	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		-
2.6.3.3	Rated current (A), type and nominal thread diameter (mm) .....		N/A
	Resistance (Ohm) of earthing conductors and their terminations, test current (A) .....		N/A
2.6.3.4	Colour of insulation.....:		N/A
2.6.4	Terminals		N/A
2.6.4.1	Protective earthing and bonding terminals		N/A
	Rated current (A), type and nominal thread diameter (mm) .....		-
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance		N/A
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.7	<b>Overcurrent and Earth Fault Protection in Primary Circuits</b>		Pass
2.7.1	Basic requirements	The building installation is considered as protection in Primary Circuits.	Pass
	Instructions when protection relies on building installation		Pass
2.7.2	Faults not covered in 5.3		Pass
2.7.3	Short-circuit backup protection	The building installation is considered as providing short-circuit protection.	Pass
2.7.4	Number and location of protective devices .....	The building installation is considered as providing short-circuit protection.	N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel.....:		N/A

2.8	<b>Safety Interlocks</b>		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Interlocks with moving parts		N/A
2.8.6	Overriding an interlock		N/A
2.8.7	Switches and relays in interlock systems		N/A
2.8.7.1	Contact gaps (mm) .....		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test (V)		N/A
2.8.8	Mechanical actuators		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.9	<b>Electrical Insulation</b>		Pass
2.9.1	Properties of insulating materials	See appended table 1.5.1	Pass
2.9.2	Humidity conditioning	Humidity treatment performed to 48 hrs in condition:  93%, 25 Degree C	Pass
2.9.3	Requirements for insulation	Electric strength test conducted after the humidity treatment. No flash over or breakdown of insulation.  (see sub-clause 2.10, 4.5.1, and 5.2 )	Pass
2.9.4	Insulation parameters	Both parameters were considered.	Pass
2.9.5	Categories of insulation	Reinforce insulation required for Primary and SELV. For functional insulation, see 5.3.4.	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

2.10	<b>Clearances, Creepage Distancesand Distances Through Insulation</b>		Pass
2.10.1	General	Pollution degree 2 applicable.	Pass
2.10.2	Determination of working voltage	(see appended table 2.10.3 and 2.10.4)	Pass
2.10.3	Clearances	(see appended table 2.10.3 and 2.10.4) For Functional Insulation, see 5.3.4.	Pass
2.10.3.1	General		Pass
2.10.3.2	Clearances in primary circuit	(see appended table 2.10.3 and 2.10.4)	Pass
2.10.3.3	Clearances in secondary circuits	Functional insulation only. See 5.3.4 .	Pass
2.10.3.4	Measurement of transient levels		N/A
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4) For Functional Insulation, see 5.3.4.	Pass
	CTI tests .....	Assume material group III b: 100<=CTI<175	-
2.10.5	Solid insulation	See below	Pass
2.10.5.1	Minimum distance through insulation	(see appended table 2.10.5)	Pass
2.10.5.2	Thin sheet material	Evaluated as part of power supply.	Pass
	Number of layers (pcs) .....		-
	Electric strength test.....		-
2.10.5.3	Printed boards		N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material .....		-
	Number of layers (pcs) .....		N/A
2.10.5.4	Wound components	Wire that has multi-layer extruded or spirally wrapped insulation (where only the finished wire can be tested) and passes the tests of annex U.	Pass
	Number of layers (pcs) .....	3 layers	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

	Two wires in contact inside component; angle between 45° and 90°	Prevented by insulating sleeving	Pass
2.10.6	Coated printed boards	No coated printed wiring boards.	N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C) .....		N/A
2.10.6.5	Electric strength test.....		-
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test.....		-
2.10.7	Enclosed and sealed parts.....	No hermetically sealed or enclosed components used.	N/A
	Temperature T1=T2 + Tmra - Tamb +10K (°C) .....		N/A
2.10.8	Spacings filled by insulating compound.....		N/A
	Electric strength test.....		-
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A

3	WIRING, CONNECTIONS AND SUPPLY	Pass
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IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

3.1	<b>General</b>		Pass
3.1.1	Current rating and overcurrent protection		Pass
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	Pass
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	Pass
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltages involved. All internal wirings are UL Recognized and rated minimum 300 V ac.	Pass
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Non-metallic materials in electrical connections	No contact pressure through insulating material.	Pass
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring	Not provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.2	<b>Connection to A.C. Mains Supplies</b>		Pass
3.2.1	Means of connection .....	The unit is provided with a means for direct plug-in.	Pass
3.2.2	Multiple supply connections	Single mains supply.	N/A
3.2.3	Permanently connected equipment	The equipment is not permanently connected.	N/A
	Number of conductors, diameter (mm) of cable and conduits.....:		-
3.2.4	Appliance inlets	The unit is provided with a means for direct plug-in.	N/A
3.2.5	Power supply cords	The unit is provided with a means for direct plug-in.	N/A
	Type.....:		-
	Rated current (A), cross-sectional area (mm <sup>2</sup> ),AWG .....		-
3.2.6	Cord anchorages and strain relief	The unit is provided with a means for direct plug-in.	N/A
	Mass of equipment (kg), pull (N).....:		-
	Longitudinal displacement (mm) .....		-
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	D (mm); test mass (g) .....		-
	Radius of curvature of cord (mm) .....		-
3.2.9	Supply wiring space		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

3.3	<b>Wiring Terminals for Connection of External Conductors</b>	N/A
3.3.1	Wiring terminals	N/A
3.3.2	Connection of non-detachable power supply cords	N/A
3.3.3	Screw terminals	N/A
3.3.4	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....	N/A
3.3.5	Rated current (A), type and nominal thread diameter (mm) .....	N/A
3.3.6	Wiring terminals design	N/A
3.3.7	Grouping of wiring terminals	N/A
3.3.8	Stranded wire	N/A

3.4	<b>Disconnection From the A.C. Mains Supply</b>	Pass
3.4.1	General requirement	Pass
3.4.2	Disconnect devices	The plug is considered to be the disconnect device.
3.4.3	Permanently connected equipment	N/A
3.4.4	Parts which remain energized	N/A
3.4.5	Switches in flexible cords	N/A
3.4.6	Single-phase equipment	Disconnect device disconnects both poles simultaneously.
3.4.7	Three-phase equipment	The equipment is single-phased.
3.4.8	Switches as disconnect devices	N/A
3.4.9	Plugs as disconnect devices	Pass
3.4.10	Interconnected equipment	N/A
3.4.11	Multiple power sources	One power source only.

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Clause	Requirement + Test	Result - Remark	Verdict

3.5	<b>Interconnection of Equipment</b>		Pass
3.5.1	General requirements	This equipment is only considered for connection to SELV.  Ref. to 2.2 for other details.	Pass
3.5.2	Types of interconnection circuits .....:	Interconnection circuits are SELV CIRCUITS.	Pass
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N/A

4	<b>PHYSICAL REQUIREMENTS</b>	Pass
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4.1	<b>Stability</b>	N/A
	Angle of 10°	N/A
	Test: force (N) .....	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.2	<b>Mechanical strength</b>		Pass
4.2.1	General	See below.	Pass
4.2.2	Steady force test, 10 N	10N were applied to components.  No energy or other hazards.	Pass
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	250N were applied to the outer enclosure.  No energy or other hazards.	Pass
4.2.5	Impact test		N/A
4.2.6	Drop test		Pass
4.2.7	Stress relief	No indication of shrinkage or distortion on enclosures due to the stress relief test (70 degree C/7 h). See Annex A.10.	Pass
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified .....		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.3	<b>Design and Construction</b>		Pass
4.3.1	Edges and corners	All edges and corners judged to be sufficiently well rounded so as not to constitute a hazard.	Pass
4.3.2	Handles and manual controls; force (N) .....	:	N/A
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts		N/A
4.3.5	Connection of plugs and sockets		Pass
4.3.6	Direct plug-in equipment		Pass
	Torque (Nm).....:		-
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids .....	:	N/A
	Quantity of liquid (l) .....	:	N/A
	Flash point (°C).....:		N/A
4.3.13	Radiation; type of radiation .....	:	N/A
	Equipment using lasers		N/A

4.4	<b>Protection Against Hazardous Moving Parts</b>		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.5	<b>Thermal Requirements</b>		Pass
4.5.1	Temperature rises	(see appended table 4.5)	Pass
	Normal load condition per Annex L.....:	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established.	Pass
4.5.2	Resistance to abnormal heat	It has been determined from examination of the physical characteristics of the materials used that the material meets the requirements of the test. See Appended Table 4.5.2.	Pass

4.6	<b>Openings in Enclosures</b>		N/A
4.6.1	Top and side openings	No opening.	N/A
	Dimensions (mm).....:		-
4.6.2	Bottoms of fire enclosures	No bottom opening.	N/A
	Construction of the bottom .....		-
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature/time .....		-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.7	<b>Resistance to Fire</b>		Pass
4.7.1	Reducing the risk of ignition and spread of flame	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	Pass
4.7.2	Conditions for a fire enclosure		Pass
4.7.2.1	Parts requiring a fire enclosure	A fire enclosure covers all parts.	Pass
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		Pass
4.7.3.1	General	See below.	Pass
4.7.3.2	Materials for fire enclosures	V-1 minimum.	Pass
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better.  See Table 1.5.1 for material information.	Pass
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b>	Pass
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IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	<b>Touch current and protective conductor current</b>		Pass
5.1.1	General	See below.	Pass
5.1.2	Equipment under test (EUT)	Equipment designed for connection to only one power source.	Pass
5.1.3	Test circuit	Single phase equipment intended only for connection to star TN or TT system.	Pass
5.1.4	Application of measuring instrument	Test made to 10X20 cm metal foil in contact with accessible non-conductive part.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements		Pass
	Test voltage (V).....:	254 V ac	-
	Measured current (mA).....:	0.025 A maximum	-
	Max. allowed current (mA).....:	0.25 mA.	-
5.1.7	Equipment with touch current exceeding 3.5 mA ..:		N/A
5.1.8	Touch currents to and from telecommunication networks	No TNV circuit.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network		N/A
	Test voltage (V).....:		-
	Measured current (mA).....:		-
	Max. allowed current (mA).....:		-
5.1.8.2	Summation of touch currents from telecommunication networks		N/A

5.2	<b>Electric Strength</b>		Pass
5.2.1	General	Based on the electric strength test the use of the insulating materials within the equipment is satisfactory.	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test.  (see appended table 5.2)	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	<b>Abnormal Operating and Fault Conditions</b>		Pass
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	Pass
5.3.2	Motors	No motors.	N/A
5.3.3	Transformers	Transformers are constructed in accordance with the applicable Clause and Annex C.  (see appended Annex C)	Pass
5.3.4	Functional insulation.....:.....	Functional insulation complies with method (c). See 5.3.8.	Pass
5.3.5	Electromechanical components		N/A
5.3.6	Simulation of faults	See appended table 5.3.	Pass
5.3.7	Unattended equipment		N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire, emission of molten metal or deformation was noted during the tests. Electric Strength tests performed after abnormal and fault tests.	Pass

6	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b>	N/A
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6.1	<b>Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment</b>	N/A
6.1.1	Protection from hazardous voltages	N/A
6.1.2	Separation of the telecommunication network from earth	N/A
6.1.2.1	Requirements	N/A
	Test voltage (V).....:.....	-
	Current in the test circuit(mA).....:.....	-
6.1.2.2	Exclusions .....	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

6.2	<b>Protection of Equipment Users From Overvoltages on Telecommunication Networks</b>	N/A
6.2.1	Separation requirements	N/A
6.2.2	Electric strength test procedure	N/A
6.2.2.1	Impulse test	N/A
6.2.2.2	Steady-state test	N/A
6.2.2.3	Compliance criteria	N/A

6.3	<b>Protection of Telecommunication Wiring System From Overheating</b>	N/A
	Max. output current (A) .....	-
	Current limiting method.....	-

A	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b>	Pass
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A.1	<b>Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)</b>	N/A
A.1.1	Samples, material .....	-
	Wall thickness (mm) .....	-
A.1.2	Conditioning of samples; temperature (°C) .....	N/A
A.1.3	Mounting of samples .....	N/A
A.1.4	Test flame	N/A
A.1.5	Test procedure	N/A
A.1.6	Compliance criteria	N/A
	Sample 1 burning time (s).....	-
	Sample 2 burning time (s).....	-
	Sample 3 burning time (s).....	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.2	<b>Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)</b>	N/A
A.2.1	Samples, material .....: .....	-
	Wall thickness (mm) .....: .....	-
A.2.6	Compliance criteria	N/A
	Sample 1 burning time (s).....: .....	-
	Sample 2 burning time (s).....: .....	-
	Sample 3 burning time (s).....: .....	-
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8	N/A
	Sample 1 burning time (s).....: .....	-
	Sample 2 burning time (s).....: .....	-
	Sample 3 burning time (s).....: .....	-

A.3	<b>High current arcing ignition test (see 4.7.3.2)</b>	N/A
A.3.1	Samples, material .....: .....	-
	Wall thickness (mm) .....: .....	-
A.3.5	Compliance criteria	N/A
	Sample 1 number of arcs to ignition (pcs) .....: .....	-
	Sample 2 number of arcs to ignition (pcs) .....: .....	-
	Sample 3 number of arcs to ignition(pcs).....: .....	-
	Sample 4 number of arcs to ignition(pcs).....: .....	-
	Sample 5 number of arcs to ignition (pcs) .....: .....	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.4	<b>Hot wire ignition test (see 4.7.3.2)</b>	N/A
A.4.1	Samples, material .....: Wall thickness (mm) .....	-
	.....: .....	-
A.4.5	Compliance criteria	N/A
	Sample 1 ignition time (s) .....	-
	.....: .....	-
	Sample 3 ignition time (s) .....	-
	.....: .....	-
	Sample 4 ignition time (s) .....	-
	.....: .....	-
	Sample 5 ignition time (s) .....	-

A.5	<b>Hot flaming oil test (see 4.6.2)</b>	N/A
-----	-----------------------------------------	-----

A.6	<b>Flammability tests for classifying materials V-0, V-1 or V-2</b>	N/A
A.6.1	Samples, material .....: Wall thickness (mm) .....	-
	.....: .....	-
A.6.5	Compliance criteria	N/A
A.6.6	Permitted retest	N/A

A.7	<b>Flammability test for classifying foamed materials HF-1, HF-2 or HFB</b>	N/A
A.7.1	Sample, material .....: Wall thickness (mm) .....	-
	.....: .....	-
A.7.4	Compliance criteria	N/A
A.7.5	Compliance criteria, HF-2	N/A
A.7.6	Compliance criteria, HF-1	N/A
A.7.7	Compliance criteria, HBF	N/A
A.7.8	Permitted retest, HF-1 or HF-2	N/A
A.7.9	Permitted retest, HBF	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.8	<b>Flammability test for classifying materials HB</b>	N/A
A.8.1	Samples, material .....: Sample thickness (mm) .....	-
		-
A.8.2	Conditioning of samples; temperature (°C) .....	N/A
A.8.4	Test procedure	N/A
A.8.5	Compliance criteria	N/A
A.8.6	Permitted retest	N/A

A.9	<b>Flammability test for classifying materials 5V</b>	N/A
A.9.1	Samples, material .....: Sample thickness (mm) .....	-
		-
A.9.4	Test procedure, test bars	N/A
A.9.5	Test procedure, test plaques	N/A
A.9.6	Compliance criteria	N/A
A.9.7	Permitted retest	N/A

A.10	<b>Stress relief conditioning (see 4.2.7)</b>	Pass
	Temperature (°C) .....: 70	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

B	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b>	N/A
B.1	General requirements	N/A
	Position .....	-
	Manufacturer .....	-
	Type.....	-
	Rated values.....	-
B.2	Test conditions	N/A
B.3	Maximum temperatures	N/A
B.4	Running overload test	N/A
B.5	Locked-rotor overload test	N/A
	Test duration (days) .....	-
	Electric strength test: test voltage (V).....	-
B.6	Running overload test for DC motors in secondary circuits	N/A
B.7	Locked-rotor overload test for DC motors in secondary circuits	N/A
B.7.1	Test procedure	N/A
B.7.2	Alternative test procedure; test time (h).....	N/A
B.7.3	Electric strength test	N/A
B.8	Test for motors with capacitors	N/A
B.9	Test for three-phase motors	N/A
B.10	Test for series motors	N/A
	Operating voltage (V) .....	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

C	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>	Pass
	Position .....: (see appended table 1.5.1)	-
	Manufacturer .....: (see appended table 1.5.1)	-
	Type.....: (see appended table 1.5.1)	-
	Rated values.....: (see appended table 1.5.1)	-
	Method of protection.....: (see appended table 1.5.1)	-
C.1	Overload test	Evaluated as part of power supply.
C.2	Insulation	(see appended table 5.2)
	Protection from displacement of windings .....:	Triple insulated wire used.  For transformer in power supply, evaluated as part of power supply.

G	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>	N/A
G.1	Summary of the procedure for determining minimum clearances	N/A
G.2	Determination of mains transient voltage (V) .....	N/A
G.3	Determination of telecommunication network transient voltage (V) .....	N/A
G.4	Determination of required withstand voltage (V) ...:	N/A
G.5	Measurement of transient levels (V) .....	N/A
G.6	Determination of minimum clearances .....	N/A

H	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>	N/A
	Ionizing radiation	N/A
	Measured radiation (mR/h) .....	-
	Measured high-voltage (kV) .....	-
	Measured focus voltage (kV).....:	-
	CRT markings .....	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

J	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>	N/A
	Metal used .....	-

K	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)</b>	N/A
K.1	Making and breaking capacity	N/A
K.2	Thermostat reliability; operating voltage (V).....:	N/A
K.3	Thermostat endurance test; operating voltage (V):	N/A
K.4	Temperature limiter endurance; operating voltage (V).....:	N/A
K.5	Thermal cut-out reliability	N/A
K.6	Stability of operation	N/A

M	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>	N/A
M.2	Method A	N/A
M.3	Method B	N/A
M.3.1	Ringing signal	N/A
M.3.1.1	Frequency (f) .....	-
M.3.1.2	Voltage (V) .....	-
M.3.1.3	Cadence; time (s), voltage (V) .....	-
M.3.1.4	Single fault current (mA).....:	-
M.3.2	Tripping device and monitoring voltage .....	N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage	N/A
M.3.2.2	Tripping device	N/A
M.3.2.3	Monitoring voltage (V).....:	N/A

U	<b>ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)</b>	Pass
	Separate test report	(see appended table 1.5.1)

IEC 60950					
Clause	Requirement + Test		Result - Remark		Verdict

1.5.1	<b>TABLE: list of critical components</b>					Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity <sup>1</sup> )	
01. PWB	--	--	Minimum V-1, 105 degree C	UL796	UL, -	
02. Varistor (R31)	Centra Science Corp.	CNR-07D471K	Minimum 250 Vac	UL1449	UL, -	
03. Transient Voltage Suppressors (D4, D5)	Concord Semiconductor Corp.	SAC5.0	Minimum breakdown voltage 7.60 V.	UL1449	UL, -	
04. X-Cap. (C39)	Hua Jung Components Co., Ltd.	MKP	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
04a. X-Cap. (C39)	ISKRA Kondenzatorji d.d.	KNB 1560, KNB 1562, or KNB 1563	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
04b. X-Cap. (C39) (Alternate)	Matsushita Electric Ind. Co., Ltd.	ECQUG	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
04c. X-Cap. (C39) (Alternate)	Murata Manufacturing Co., Ltd.	KH or KX	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
04d. X-Cap. (C39) (Alternate)	Pan Overseas Electronics Co., Ltd.	PY	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
04e. X-Cap. (C39) (Alternate)	TDK Corp.	CS	Maximum 0.01uF, 250 Vac, CLass X1 or X2.	UL1283, IEC60384-14 /1993	--, VDE	
05. Transformer (T1)	--	--	Class 105 degree C, see Enclosure diagram 04-1 for detail.	--	--, --	
05-1. Transformer - Coil (Triple insulation wire)	Rubadue Wire Co., Inc.	T28A01T292-2, T28A01T949-2, or T28A01T595- 2	Insulation wire; B1-B2: 0.32 mm diameter by 3 turns; G1-G2: 0.32 mm diameter by 3 turns; R1-R2: 0.32 mm diameter by 3 turns	UL2353	UL, -	

IEC 60950					
Clause	Requirement + Test		Result - Remark	Verdict	
05-2 Transformer - Core	--	--	Toroidal core, ferrite, 9.3 mm OD by 4.8 mm ID by 1.3 mm thick	--	--, --
05-3. Transformer - Tubing	Fluo Tech Industries Co., Ltd.	TFL	Minimum 200 degree C, 150 V, Provided on the end lead of coil.	UL224	UL, -
05-4. Transformer - Glue	Dow Corning Corp.	3165	V-2 minimum, Provide on the bottom of transformer.	UL94	UL, -
05-5. Transformer - Heat shrink Tubing	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 105 degree C, 300 V	UL224	UL, -
06. Power Module	Universal Microelectronics Co., Ltd.	UP0051A-05	I/P: 100-240Vac, 47-63Hz, 0.2A maximum; O/P: 5Vdc, 1A	UL60950, IEC60950: 1999	UL, TUV CB Cert No. JPTUV-006434
07. Insulator	Formex, Div Of Illinois Tool Works Inc, Formerly	FORMEX GK	V-0 minimum, 115 degree C. Overall see Enclosure diagram 4-02 for detail dimension, minimum 0.41 mm, located between power module and shielding.	UL94, UL746C	UL, -
08. Shielding	--	--	Metal, overall see Enclosure diagram 4-02 for detail dimension.	--	--, --
09. Enclosure	GE Plastics Pacifics	945	V-0, 80 degree C, overall 112.6 by 63.6 by 44.0 mm, minimum 2.0 mm thick.	UL94, UL746C	UL, -
10. Connector	--	--	SELV, RJ-45, one provided	--	--, --

IEC 60950					
Clause	Requirement + Test		Result - Remark	Verdict	
11. Internal wiring	--	--	FEP, PTFE, PVC, TFE, neoprene, polyamide or marked VW-1; minimum 300 V, 80 degree C.	UL758	UL, -
12. Interconnecting Cable (Optional)	--	--	Minimum 80 degree C, 30 V, maximum 3.05 m long, jacketed, VW-1 or FT-1.	UL758	UL, -
13. Insulating Tubing/Sleevings	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 105 degree C, 300 V	UL224	UL, -
<sup>1)</sup> an asterisk indicates a mark which assures the agreed level of surveillance					

IEC 60950						
Clause	Requirement + Test			Result - Remark		Verdict

1.6.2		<b>TABLE: electrical data (in normal conditions)</b>					Pass
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status	
--	--	90/47Hz	3.0	60	--	Maximum normal load	
--	--	90/63Hz	3.1	60	--	Maximum normal load	
--	0.1	100/47Hz	2.9	54	--	Maximum normal load	
--	0.1	100/63Hz	2.9	54	--	Maximum normal load	
--	0.1	240/47Hz	2.5	29	--	Maximum normal load	
--	0.1	240/47Hz	2.4	30	--	Maximum normal load	
--	--	254/47Hz	2.8	29	--	Maximum normal load	
--	--	254/63Hz	2.6	30	--	Maximum normal load	

supplementary information:

Maximum normal load: Connect to computer and transmit data continuously.

2.10.3 and 2.10.4	<b>TABLE: clearance and creepage distance measurements</b>						Pass
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)	
CN1 (power module) to shielding	<448	<250	4.2	>5.0	5.0	>5.0	
F1 (power module) to shielding	<448	<250	4.2	>5.0	5.0	>5.0	
J1 to U4 pin1	<448	<250	4.2	>5.0	5.0	>5.0	
Under T1	<420	<250	4.0	>5.0	5.0	>5.0	

supplementary information:

--

2.10.5	<b>TABLE: distance through insulation measurements</b>				Pass
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)	
Insulation sheet	240	3000	0.4	>0.41	
Enclosure	240	3000	0.4	>2	

supplementary information:

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IEC 60950				
Clause	Requirement + Test	Result - Remark	Verdict	

4.5	<b>TABLE: temperature rise measurements</b>				Pass
	test voltage (V) ..... : 63 HZ, 90 Vac, 2.5hrs, Horizontal / 254 Vac, 2.5hrs, Horizontal / 90 Vac, 2hrs, Vertical / 254 Vac, 2hrs, Vertical				—
	t1 (°C) ..... : --				—
	t2 (°C) ..... : Ambient = 25.7 / 24.5 / 25.3 / 25.0 degree C				—
temperature rise dT of part/at:		dT (K)		required dT (K)	
C1 body (power unit)		37.2 / 42.6 / 36.7 / 41.2		65	
L1 coil (power unit)		34.5 / 40.0 / 34.0 / 38.5		65	
T1 coil (power unit)		39.5 / 45.5 / 38.6 / 43.7		70	
T1 core (power unit)		39.7 / 46.0 / 38.9 / 44.2		70	
PWB near IC1 (power unit)		33.3 / 37.5 / 32.7 / 35.9		65	
LX coil (power unit)		35.6 / 40.0 / 34.6 / 38.0		65	
T1 coil		26.0 / 29.7 / 26.0 / 28.5		50	
Enclosure inside		15.0 / 17.8 / 14.5 / 15.9		40	
Enclosure outside		9.9 / 11.6 / 9.4 / 10.0		40	
temperature rise dT of winding:		R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	dT (K)	required dT (K)
--		--	--	--	--
supplementary information:					
Maximum normal load: Connect to computer and transmit data continuously. Tmra = 40 degree C, the maximum temperature rise is calculated as follows: Winding components:Transformer - Class A: dTmax = 75K - 10K-(40-25)K = 50 K Winding components:Transformer - Class B: dTmax = 95K - 10K-(40-25)K = 70 K Components with: - maximum absolute temp. of 105 degree C (PWB): dTmax = (105-40)K = 65 K - when no class of insulation is given, minimum insulation 105 degree C assumed. - maximum absolute temp. of 80 degree C (Enclosure): dTmax = (80-40)K = 40 K User Accessible Area: - material is plastic (70K) dTmx = 70K-(40-25)K = 55K					

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.5.2	<b>TABLE: ball pressure test of thermoplastics</b>	Pass	
	allowed impression diameter (mm)..... : 2 mm		—
part		test temperature (°C)	impression diameter (mm)
Enclosure, GE Plastics/945, 2.4 mm	125	1	
supplementary information:			
--			

5.2	<b>TABLE: electric strength tests and impulse tests</b>	Pass	
	test voltage applied between:	test voltage (V)	breakdown Yes / No
Primary to SELV	4242 Vdc	No	
Primary to Enclosure with foil	4242 Vdc	No	
T1 primary winding to SELV winding	3000 Vac	No	
T1 primary winding to core	3000 Vac	No	
T1 SELV winding to core	3000 Vac	No	
supplementary information:			
--			

5.3	<b>TABLE: fault condition tests</b>	Pass				
	ambient temperature (°C) .....	See below	—			
	model/type of power supply..... :	--	—			
	manufacturer of power supply..... :	--	—			
	rated markings of power supply .....	--	—			
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
C25	Short	240 Vac	< 1S	--	0.03 - 0	Breaker open, NB, NC, NT.
T1 (B1-B2)	Short	240 Vac	2 hrs	--	0.03	NO, NB, NC, NT, CT. Maximum temperature T1 coil: 58 degree C, Ambient: 25.7 degree C.
T1 (G1-G2)	Short	240 Vac	2 hrs	--	0.03	NO, NB, NC, NT, CT. Maximum temperature T1 coil: 51.3 degree C, Ambient: 25.8 degree C.
RJ45 Pin1-8 to ground	Overload	240 Vac	1 min	--	0.03	NO, NB, NC, NT. Open circuit voltage measured 0 V.

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

supplementary information:
Comments Key: NO - Normally operated NB - No indication of dielectric breakdown NC - Cheesecloth remained intact NT - Tissue paper remained intact CT - Constant temperatures were obtained

A.6.5	<b>TABLE: flammability test for classifying materials V-0, V-1 or V-2</b>		N/A		
sample No. / ref.	afterflame time (s) $t_1$ or $t_2$		afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$		
supplementary information:					

A.6.6	<b>TABLE: flammability re-test for classifying materials V-0, V-1 or V-2</b>		N/A		
sample No.	afterflame time (s) $t_1$ or $t_2$		afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$		
supplementary information:					

A.7.4, A.7.5, A.7.6 and A.7.7	<b>TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF</b>			N/A
sample No. / ref.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
supplementary information:				

A.7.8	<b>TABLE: flammability re-test for classifying foam materials HF-1 or HF-2</b>			N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment
supplementary information:				

IEC 60950				
Clause	Requirement + Test		Result - Remark	Verdict

A.7.9	<b>TABLE: flammability re-test for classifying foam materials HBF</b>				N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)	
supplementary information:					

A.8.5	<b>TABLE: flammability test for classifying materials HB</b>				N/A
sample No.	flaming/glowing rate mm/min		flaming/glowing distance from reference mark (mm)		
supplementary information:					

A.8.6	<b>TABLE: flammability re-test for classifying materials HB</b>				N/A
sample No.	flaming/glowing rate mm/min		flaming/glowing distance from reference mark (mm)		
supplementary information:					

A.9.6	<b>TABLE: flammability test for classifying materials 5V</b>				N/A
sample	test bars		test plaques		
No./ref.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
supplementary information:					

A.9.7	<b>TABLE: flammability re-test for classifying materials 5V</b>				N/A
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IEC 60950				
Clause	Requirement + Test		Result - Remark	Verdict

sample	test bars		test plaques		
	No.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)
supplementary information:					

## **Enclosure**

### **National Differences**

(Total 25 Pages including this Cover Page)

Austria\*\*  
Belgium\*\*  
**Czech Republic\***  
Denmark  
Finland  
France\*\*  
Germany  
Greece\*\*  
Group  
Hungary\*  
Ireland  
Italy\*\*  
Japan  
**Netherlands\*\***  
Norway  
Poland\*  
Slovakia\*  
Slovenia\*  
**South Africa\***  
Spain  
Sweden  
Switzerland  
**USA / Canada**  
Yugoslavia\*

\* No National Differences Declared

\*\* Only Group Differences

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Denmark - Differences to IEC60950, Third Edition (1999)			
1.2.4.1	Certain types of Class I appliances (see sub-clause 3.2.1) may be provided with plug not establishing earthing continuity when inserted into Danish socket-outlets.		N/A
1.7.2	<p>Supply cords of Class I equipment, which is delivered without a plug, must be provided with a visible tag with the following text:</p> <p style="text-align: center;">"Vigtigt ! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket (IEC 417, No. 5019) eller (IEC 417, No. 5017)."</p> <p>If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning".</p>		N/A
1.7.5.a	Socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment.		N/A
1.7.5.b	Class II equipment shall not be fitted with socket-outlets for providing power to other equipment.		Pass
1.7.15	<p>Caution text concerning lithium batteries:</p> <p style="text-align: center;">ADVARSEL! Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.</p> <p>The size of the warning must be a minimum of 26 x 52 mm, the background shall be yellow colour with black frame, and the text in black colour. A white background is acceptable in the User's Instruction and in the Service Manual.</p>		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

3.2.1	<p>Supply cord of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>Class I equipment provided with socket-outlets with earth contact or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a rated current exceeding 10 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-1-D1 or EN 60309-2.</p>		N/A
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Finland - Differences to IEC60950, Third Edition (1999)		
6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE-EQUIPMENT TYPE B only.	N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Germany - Differences to IEC60950, Third Edition (1999)			
1.7.12	<p>Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.</p> <p>NOTE: Of this requirement, rules for use even only by service personnel are not exempted.</p>		N/A
H.a	a) A license is required by those who operate an X-ray emission source		N/A
H.b	<p>b) A license in accordance with Clause 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if:</p> <ul style="list-style-type: none"> <li>1) The local dose rate at a distance of 0.1 m from the surface does not exceed 1 µSv/h and</li> <li>2) it is adequately indicated on the X-ray emission source that           <ul style="list-style-type: none"> <li>i) X-rays are generated and</li> <li>ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer</li> </ul> </li> </ul>		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
H.c	<p>c) A license in accordance with Clause 1 is also not required by persons who operate a X-ray emission source on which the electron acceleration voltage exceeds 20 kV if:</p> <ul style="list-style-type: none"> <li>1) The X-ray emission source has been granted a type approval and</li> <li>2) It is adequately indicated on the X-ray emission source that <ul style="list-style-type: none"> <li>i) X-rays are generated</li> <li>ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and</li> <li>iii) the electron acceleration voltage not exceed the maximum value stipulated by the manufacturer or importer</li> </ul> </li> </ul>		N/A
H.d	<p>d) Furthermore, a license in accordance with Clause 1 is also not required by persons who operate X-ray emission source on which the electron acceleration voltage does not exceed 30 kV if:</p> <ul style="list-style-type: none"> <li>1) the X-rays are generated only intrinsically safety CRTs complying with Enclosure III, No. 6</li> <li>2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measured and specified in the device and</li> <li>3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT.</li> </ul>		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Group - Differences to IEC60950, Third Edition (1999)			
2.7.1	Replace the text of this Sub-Clause by:  Basic requirements To protect against excessive current, short circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b), and c)		Pass
2.7.1.a	a).Except as detailed in b) and c), protective devices necessary to comply with the requirements of subclause 5.3 shall be Included as parts of the equipment		N/A
2.7.1.b	b).For components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short circuit and earth fault protection may be provided by protective devices in the building installation.		Pass
2.7.1.c	c).It is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instruction.		N/A
2.7.1.c	If reliance is placed on protection in the building installation. the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building Installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
2.7.2	This subclause has been declared 'void'		N/A
3.2.3	Delete NOTE 1, and in table 3A delete the conduit sizes in parentheses.		N/A
3.2.5	Replace as follows:  "60245 IEC 53" by "H05 RR-F" "60227 IEC 52" by "H03 VV-F or H03 VVH2-F" "60227 IEC 53" by "H05 VV-F or H05 VVH2-F"		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.2.5	<p>In table 3B, replace the first four lines by the following:</p> <p>Up to and including 6                    0.75 1)      Over 6 up to and including 10    0.75 2) 1.0      Over 10 up to and including 16    1.0 3) 0.5</p> <p>In the Conditions applicable to table 3B delete the words "in some countries" in condition 1.</p> <p>In NOTE 1, delete the second sentence.</p>		N/A
3.3.4	<p>In table 3D, delete the fourth line - conductor sizes for 10 to 13 A. and replace with the following:</p> <p>Over 10 up to &amp; including 16      1.5 to 2.5        1.5 to by 4.</p> <p>Delete the fifth line - conductor sizes for 13 to 16A.</p>		N/A
4.3.13	<p>Replace the second compliance paragraph by:</p> <p>For equipment using LEDs or lasers, compliance is checked according to EN 60825- 1</p>		N/A
4.3.13	<p>NOTE 1 - if equipment falling within the scope of EN 60950 is inherently a class 1 laser product, i.e. it contains no embedded laser or LED of a higher class number, then a laser warning label or other laser warning statement is not required (see 1.1 of EN 60825-1).</p> <p>Renumber the NOTE below the third compliance paragraph as NOTE 2</p>		N/A
H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA the dose rate shall not exceed 1<math>\mu</math>Sv/h (0.1 mR/h) (see note). Account is taken of the background level.</p> <p>Replace the NOTE as follows:</p> <p>NOTE - These values appear in directive 96/29/Euratom.</p>		N/A
P	Replace the text of this annex by: See annex ZA		Pass

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Q	<p>Add the following notes for the standards indicated:</p> <p>IEC 60127 series NOTE. Harmonized as EN 60127 series (not modified)</p> <p>IEC 60529 NOTE: Harmonized as EN 60529: 1991 (not modified)</p> <p>IEC 61032 NOTE: Harmonized as EN 61032: 1998 (not modified)</p>		Pass
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Ireland - Differences to IEC60950, Third Edition (1999)			
3.2.1	Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (Section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations, 1997.		N/A
4.3.6	DIRECT PLUG-IN EQUIPMENT comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	Evaluate when national evaluation	N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Japan - Differences to IEC60950, Third Edition (1999)			
1.2.4.101	Addition: Definition of CLASS 0I EQUIPMENT		N/A
1.2.12.1	Replacement: FLAMMABILITY CLASSIFICATION OF MATERIALS: "The recognition of the burning behaviour of materials and their ability to extinguish if ignited. Materials are classified as in 1.2.12.2 to 1.2.12.9, and 1.2.12.101 when tested in accordance with annex A"		N/A
1.2.12.101	Addition: Definition of VTM CLASS MATERIAL		N/A
1.7.101	Addition:Marking for CLASS 0I EQUIPMENT The following instruction is indicated on the visible place of the mains plug or the main body: "Provide an earthing connection"		N/A
1.7.101	The following instruction is indicated on the visible place on the main body or written in the operating instructions: "Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains."		N/A
2.1.1.1	Replace: "IEC 60083" by "IEC 60083 or JIS C 8303" in 2.1.1.1 b)		N/A
2.6.3.1	Add the following after 1st paragraph: "This also applies to the conductor of lead wire for protective earthing of CLASS 0I EQUIPMENT"		N/A
2.6.4.1	Replace 2nd sentence in 1st paragraph: "For CLASS I EQUIPMENT with a DETACHABLE POWER SUPPLY CORD, the earthing terminal in the appliance inlet is regarded as the main protective earthing terminal"		N/A
2.6.5.4	Replace 1st sentence: "Protective earthing connections of CLASS I EQUIPMENT shall make earlier and break later than the supply connections in each of the following:"		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
2.6.101	Addition:Earthing of CLASS 0I EQUIPMENT Plugs with a lead wire for earthing not used for equipment having a rated voltage exceeding 150 V		N/A
2.6.101	For plugs with a lead wire for earthing, the lead wire is not earthed by a clip		N/A
2.6.101	CLASS 0I EQUIPMENT provided with an earthing terminal or lead wire for earthing in the external where easily visible		N/A
3.2.5	Delete the following statement from a note 1 in Table 3B: "For RATED CURRENT up to 3A, a nominal cross-sectional area of 0.5 mm <sup>2</sup> is permitted in some countries provided that the length of the cord does not exceed 2 m"		N/A
4.2.8	Add the following informative remark after the last sentence: "IEC 61965 is also applicable instead of IEC 60065"		N/A
4.5.1	Add the following to note 5) of Table 4A, Part 2: "With regard to Table 4A, insulating materials complying with Japanese requirements (refer to Japanese differences for IEC 60335-1 3rd Edition in CB Bulletin 101B) are also acceptable"		N/A
4.5.1	Add a note reference 7) to "50", in the right column of Table 4A, Part 1 and add a note 7 to Table 4A, Part 2 as follows: "7) This value apply only to wiring or cords complying with relevant IEC standards. Others comply with Japanese requirements (refer to Japanese differences for IEC 60335-1 3rd Edition in CB Bulletin 101B)"		N/A
4.7.3.2	Add the following in 7th paragraph: "- for thin materials, e.g., flexible printed boards, etc., used inside equipment, be of FLAMMABILITY CLASS VTM-2 or better"		N/A
5.1.6	Replace Table 5A to include maximum TOUCH CURRENT values for CLASS 0I EQUIPMENT		N/A
5.3.8.2	Replace 3rd Item as follows: "- BASIC INSULATION between the PRIMARY CIRCUIT and accessible conductive parts of CLASS I or 0I EQUIPMENT;"		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
Annex A	Add the subclause A.101 titled: "Flammability tests for classifying materials VTM" and the following: "Thin sheet materials shall comply with ISO 9773"		N/A
Annex G	Add to the Note for Table G.1. "2. In Japan, MAINS TRANSIENT VOLTAGE for equipment with a Nominal AC MAINS SUPPLY VOLTAGE of 100V is to be decided based on the column where Nominal AC MAINS SUPPLY VOLTAGE in Table G.1 is 150V"		N/A
Annex P	Add: "IEC 61965:2000, Mechanical Safety for Cathode Ray Tubes"		N/A
Annex U	Replace 2nd paragraph as follows: "This annex covers to round winding wires having diameters between 0.05 mm and 5.00 mm"		N/A
U.2.1	Replacement: Electric strength "The test sample is prepared per IEC 60851-5:1997, 4.4.1 (for a twisted pair and subjected to the test of 5.2.2, with a test voltage not less than twice the appropriate voltage in table 5B (see 5.2.2) of this standard. However, the minimum values shall be as follows: - for BASIC INSULATION or SUPPLEMENTARY INSULATION, 3000 V, or; - for REINFORCED INSULATION, 6000 V"		N/A
U.2.2	Replacement: Flexibility and adherence Test 8 of IEC 60851-3:1996, 5.1.1, using the mandrel diameter of Table U.1 (mm)		N/A
U.2.2	Test voltage not less than twice the appropriate voltage in table 5B (see 5.2.2) of this standard and not less than: - 1500 V for BASIC INSULATION or SUPPLEMENTARY INSULATION, or; - 3000 V for REINFORCED INSULATION		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Norway - Differences to IEC60950, Third Edition (1999)			
1.5.8	Due to the IT power system used (see annex V, figure V.7), capacitors are required to be rated for the applicable phase-to-phase voltage ( 230 V).		N/A
1.7.2	CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a communication network where safety relies on connection to protective earth, require a marking stating that the equipment must be connected to an earthed mains socket-outlet.		N/A
2.2.4	Requirements according to sub-clauses 1.7.2 and 6.1.2.1 apply for this clause.		N/A
2.3.2	Requirements according to sub-clause 6.1.2.1 apply for this clause.		N/A
2.3.3	Requirements according to sub-clause 6.1.2.1 apply for this clause.		N/A
2.3.4	Requirements according to sub-clauses 1.7.2 and 6.1.2.1 apply for this clause.		N/A
2.10.3.1	Due to the IT power distribution system used (see annex V, figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault.		N/A
6.1.2.1	<p>Note 2.</p> <p>Add the following text between the first and second paragraph:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0.4 mm, which shall pass the electric strength test below.</li> </ul>		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
6.1.2.1	<p>If this insulation forms part of a semiconductor component e.g. an optocoupler, there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition:</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1.5 kV multiplied by 1.6 (the electric strength test of 2.10.7 shall be performed using 1.5 kV); and</li> <li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1.5 kV.</li> </ul>		N/A
6.1.2.1	It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.		N/A
6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE-EQUIPMENT TYPE B only.		N/A
G.2	Due to the IT power distribution system used (see annex V, figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault.		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Spain - Differences to IEC60950, Third Edition (1999)			
3.2.1	<p>Supply cords of single-phase equipment having a rated current not exceeding:</p> <ul style="list-style-type: none"> <li>- 2.5 A shall be provided with a plug according to UNE EN 50075:1993</li> <li>- 10 A shall be provided with a plug according to UNE 20315:1994</li> </ul> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts, or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with UNE 20315:1994</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the UNE-EN 60309-2.</p>		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

Sweden - Differences to IEC60950, Third Edition (1999)			
1.5.1	Add the following: NOTE: Switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A
1.7.2	If the separation between the mains and a SELV terminal relies upon connection to safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet. The marking text shall be in Swedish and as follows: "Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk".		N/A
6.1.2.1	Note 1. Add the following text between the first and second paragraph: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0.4 mm, which shall pass the electric strength test below.		N/A
6.1.2.1	If this insulation forms part of a semiconductor component e.g. an optocoupler, there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition:  - passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1.5 kV multiplied by 1.6 (the electric strength test of 2.10.7 shall be performed using 1.5 kV); and  - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1.5 kV.		N/A
6.1.2.1	It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

6.1.2.2	The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE-EQUIPMENT TYPE B only.		N/A
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Switzerland - Differences to IEC60950, Third Edition (1999)			
1.5.1	Add the following:  NOTE: Switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A
1.7.15	Annex 4.10 of SR 814.013 (Ordinance on environmentally hazardous substances) applies for batteries.		N/A
3.2.1	Supply cords of equipment having a rated current not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 884-1 and one of the following dimension sheets:  SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V,10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V,10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V,10 A  EN 60309 applies for plugs for currents exceeding 10 A.		N/A
6.1	Protective means in the equipment shall not prevent transient surge protection in the telecommunication network from operating properly (d.c. spark-over voltage of the surge suppressor installed in the telecommunication network: approx. 245 V).		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

USA / Canada - Differences to IEC60950, Third Edition (1999)			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1.		Pass
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions		Pass
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded		N/A
1.1.2	Special requirements apply to equipment intended for use outdoors		N/A
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1		Pass
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2		Pass
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like		Pass
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector		N/A
1.5.5	External cable assemblies which exceed 3.05 m in length to be types specified in the NEC and CEC		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable		N/A
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
1.7.2	Wiring terminals supplying Class 2 outputs marked with voltage rating and "Class 2" or equivalent		N/A
1.7.6	Special fuse replacement marking for operator accessible fuses		N/A
1.7.6	Lamp replacement information indicated on lampholder in operator access area		N/A
1.7.7	Identification of terminal connection of the equipment earthing conductor		N/A
2.1.1	Screw shell of Edison-base lampholder tied to the neutral conductor		N/A
2.1.1.1	Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover		N/A
2.3.1.b	Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4.		N/A
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V <sub>p</sub> or 60 V d.c., the maximum current limit through the 2000 Ohm resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions		N/A
2.3.1.b	Limits for measurements across 5000 Ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4		N/A
2.3.2	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and routine testing		N/A
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or the Limited Power Source definition, not interchangeable with devices of higher ratings if operator replaceable		N/A
2.5	VA for limited power source measured after 60 s of operation		N/A
2.6	Protective earthing terms applied per CEC, Part 1, Sec. 0 and NEC Art. 100	Class II equipment	N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
2.6	Units having receptacles for output a.c. power connectors which are generated from an internal separately derived source have the grounded circuit conductor suitably bonded to earth		N/A
2.6.3.3	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit		N/A
2.6.3.3	Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.4		N/A
2.6.4.1	Field wiring terminals for earthing conductors must be suitable for wire sizes (gauge) used in US and Canada		N/A
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the appliance		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC, and CEC, Part 1		N/A
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring		N/A
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating		N/A
2.10.5.4	Multi-layer winding wire subject to UL wire requirements in addition to 2.10.5.4 and Annex U		Pass
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent and short circuit protection		N/A
3.1.1	All interconnecting cables protected against overcurrent and short circuit		Pass
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1		Pass
3.2.1	Permitted use for flexible cords and plugs		N/A
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.2.1	Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC, Part 1		N/A
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm <sup>2</sup> ) and not less than 152 mm in length for connection of field installed wiring		N/A
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate		N/A
3.2.3	Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions must be provided to ensure the wiring is protected from abuse		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables		N/A
3.2.5	Length of power supply cord 1.5 to 4.5 m unless shorter length used when intended for a special installation		N/A
3.2.5	Conductors in power supply cords sized according to NEC and CEC, Part I		N/A
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application		N/A
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment to properly make the field connections		N/A
3.3	Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3		N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than those specified in 3.3 if wiring is reliably separated		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm <sup>2</sup> ) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention		N/A
3.3.4	Terminals suitable to accept wire sizes (gauge) used in the U.S. and Canada		N/A
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used		N/A
3.3.6	Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads		N/A
3.3.8	Connectors and field wiring terminals involving external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used		N/A
3.3.8	Marking located adjacent to terminals and visible during wiring		N/A
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V		N/A
3.4.8	Vertically mounted disconnect devices, oriented so up position of handle is "on"		N/A
3.4.10	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means		N/A
3.6	Connections to a centralized DC power system comply with requirements for branch circuits in Sub-clause 3.2		N/A
3.6	Earthing of d.c. powered equipment provided		N/A
3.6	Overcurrent and earth fault protection in accordance with 2.7 either provided in equipment or as part of building installation		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.6	Equipment with earthed terminal (terminal for the grounded conductor) of power source connected to frame of the unit provided with special instructions and provision for earthing		N/A
3.6	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection		N/A
3.6	Special markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to earthing conductor at the equipment		N/A
3.6	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment		N/A
3.6	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit		N/A
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment comply with UL 1310 or CSA 223 mechanical assembly requirements		Pass
4.3.12	The maximum quantity of flammable liquid stored in equipment comply with ANSI/NFPA 30(Table NAE. 7)		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used		N/A
4.3.13	Equipment which produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible		N/A
4.3.13	Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370)		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
4.7.1	Automated information storage equipment intended to contain more than 0.76 mm <sup>3</sup> of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system		N/A
4.7.3	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics		N/A
4.7.3	Low smoke-producing characteristics evaluated according to UL 2043		N/A
4.7.3	Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m <sup>2</sup> or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications		N/A
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent	VW-1 or FT-1 cord used.	Pass
5.1.8.1.1	Touch current due to ringing voltage for equipment containing telecommunication network leads		N/A
5.1.8.2	When multiple ports receive ringing voltage, simulated ringing applied to 3 % if ports in excess of 3		N/A
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections		N/A
5.3.6	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator	See appended table 5.3.	Pass
5.3.6	Tests interrupted by opening of a component repeated two additional times		N/A
5.3.8.1	Test interrupted by opening of wire or trace continued by shorting gap		N/A
6	Specialized instructions, as appropriate, provided for equipment which may be connected to a telecommunications network		N/A
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
6.2.1	Special requirements for enameled wiring used as electrical separation provided between parts connected to telecommunication network and telecommunication circuitry intentionally isolated from network		N/A
6.2.1	Digital line termination equipment (e.g., NCTE) subject to separation requirements.		N/A
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable		N/A
6.4	Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C)		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions		N/A
6.5	Acoustic pressure from an ear piece less than 136 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets, and 121 dBA for insert earphones, for long duration disturbances		N/A
Annex NAB	Equipment intended for connection to centralized d.c. power systems is required to comply with special earthing, wiring, and supply voltage tolerance requirements		N/A
Annex NAC	Equipment intended for use with a generic secondary protector marked with suitable instructions		N/A
Annex NAC	Equipment intended for use with a specific primary or secondary protector marked with suitable instructions		N/A
H	Ionizing radiation measurements are made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting Devices Act, REDR C1370		N/A
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
M.4	Special requirements for message waiting and similar telecommunications signals		N/A

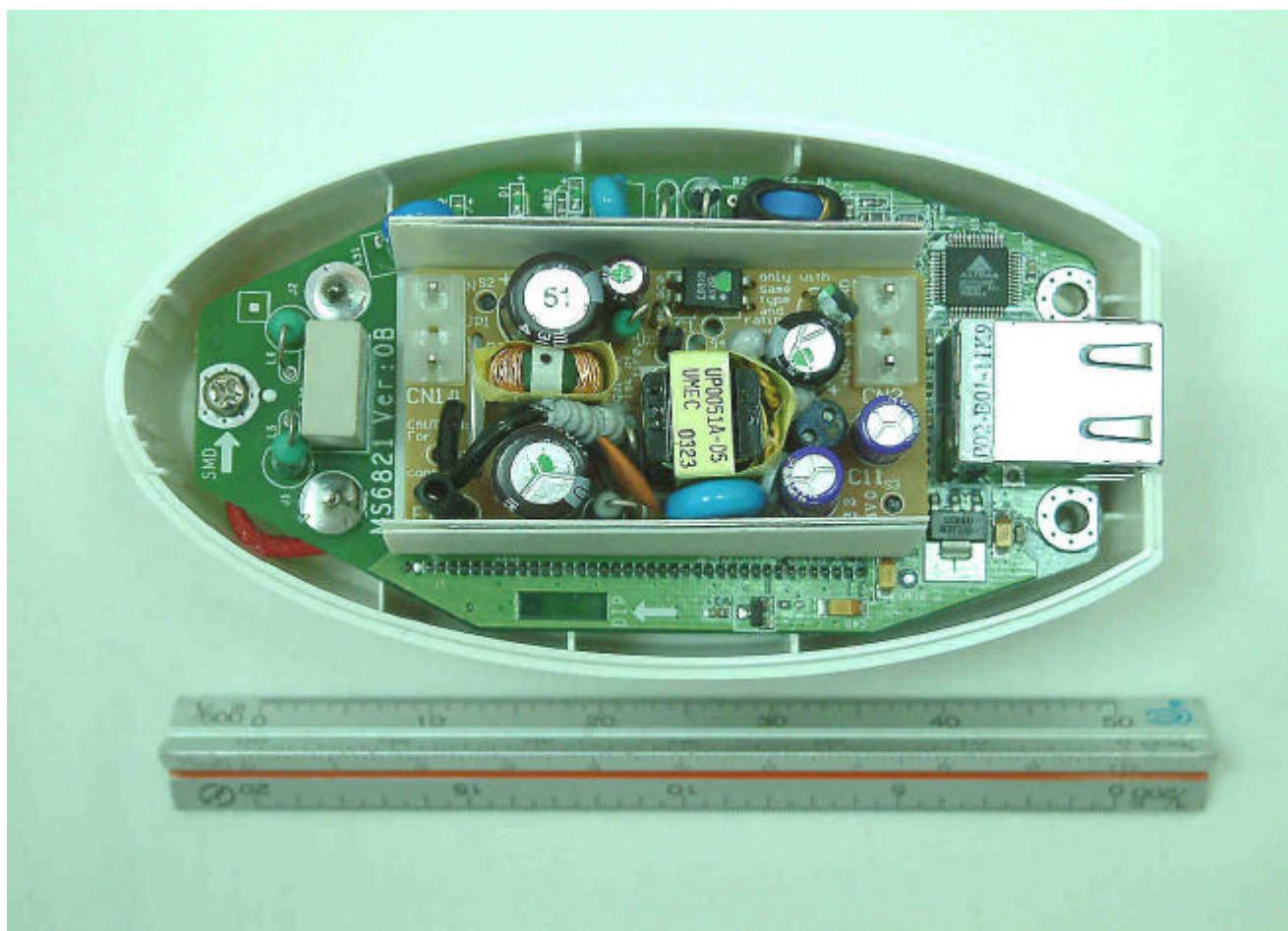
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**Photographs**

(Total 6 Pages including this Cover Page)

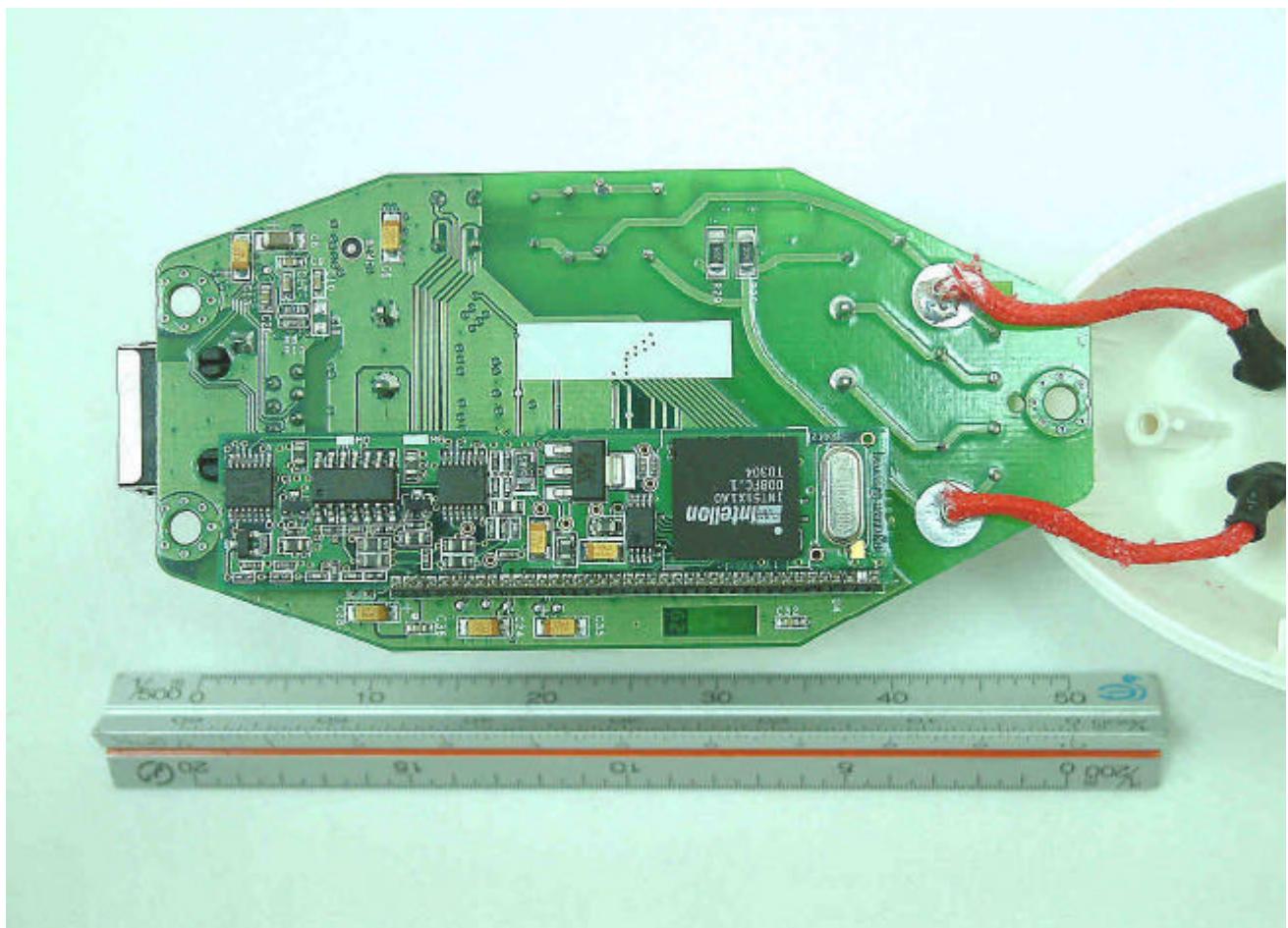
Supplement Id	Description
3-01	Top View
3-02	Bottom View with US/Canada and Japan plug
3-03	Interior View
3-04	Interior view with insulation sheet and shield
3-05	Interior bottom view
3-06	Bottom view with euro plug













**Enclosure**  
**Diagrams**

(Total 6 Pages including this Cover Page)

Supplement Id	Description
4-01	Transformer (T1)
4-02	Insulation sheet and Shield

## TRANSFORMERS


**LANKom Electronics Co., Ltd.**  
 連康電子股份有限公司

## Electrical Specifications: @25°C

Isolation: 1500 Vrms 1 Minute (PRI to SEC)

Turns Ratio: 1:1:1±3%

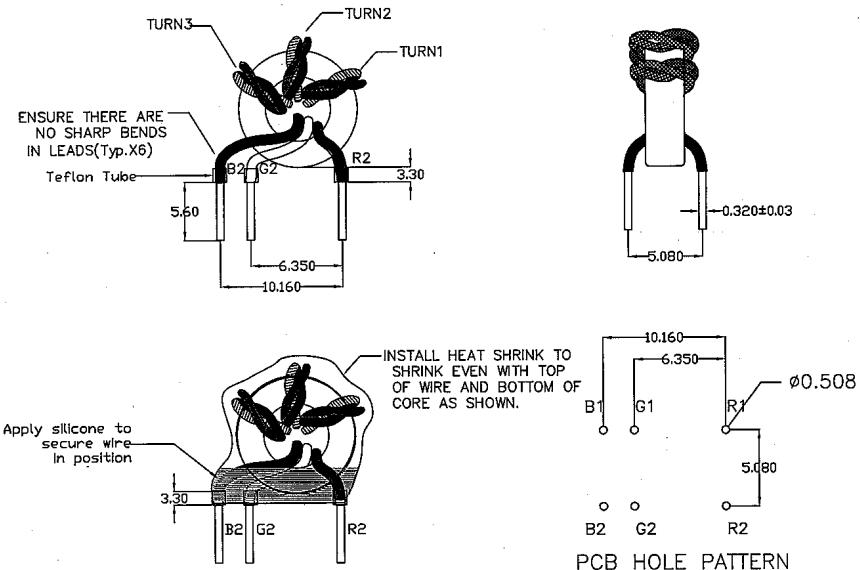
OCL: 6.4uH Typ. @100KHz 50mV

DCR: 0.010 OHM Typ.

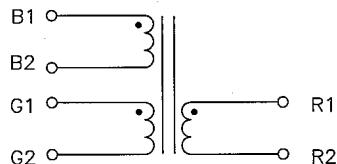
WORKING FREQUENCY: 4MHz - 21MHz

WORKING TEMPERATURE: -20°C - 80°C

## Mechanicals:



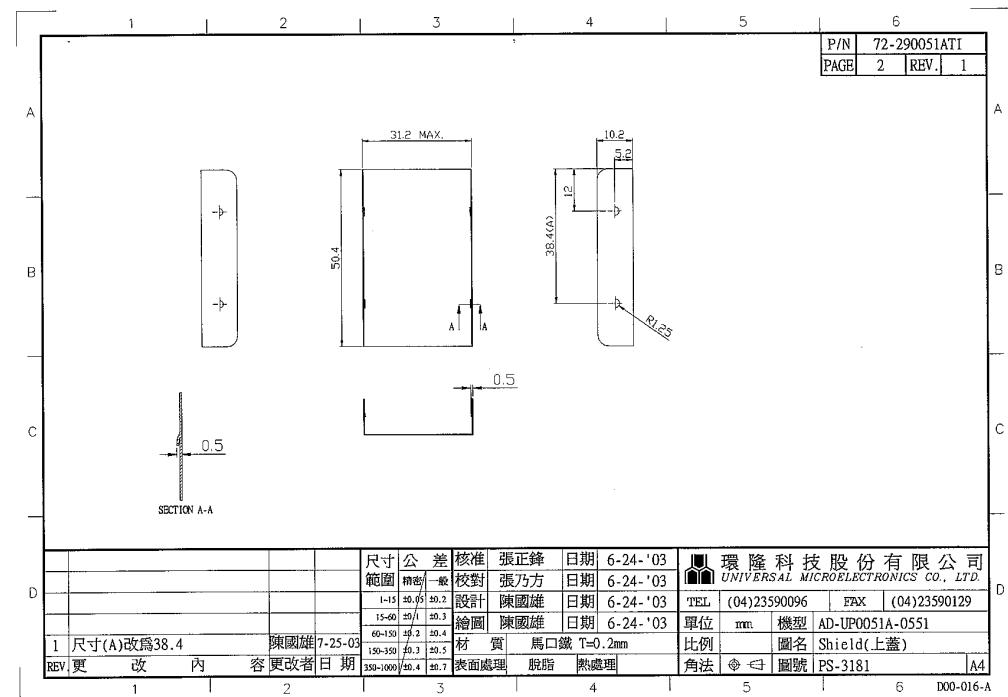
## Schematics:

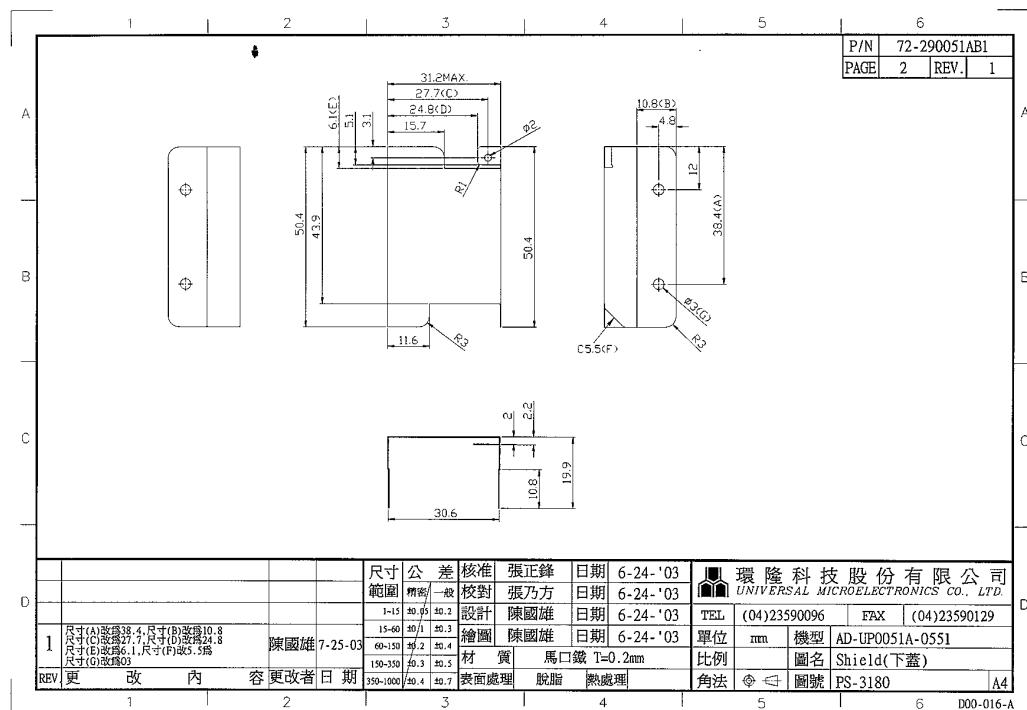


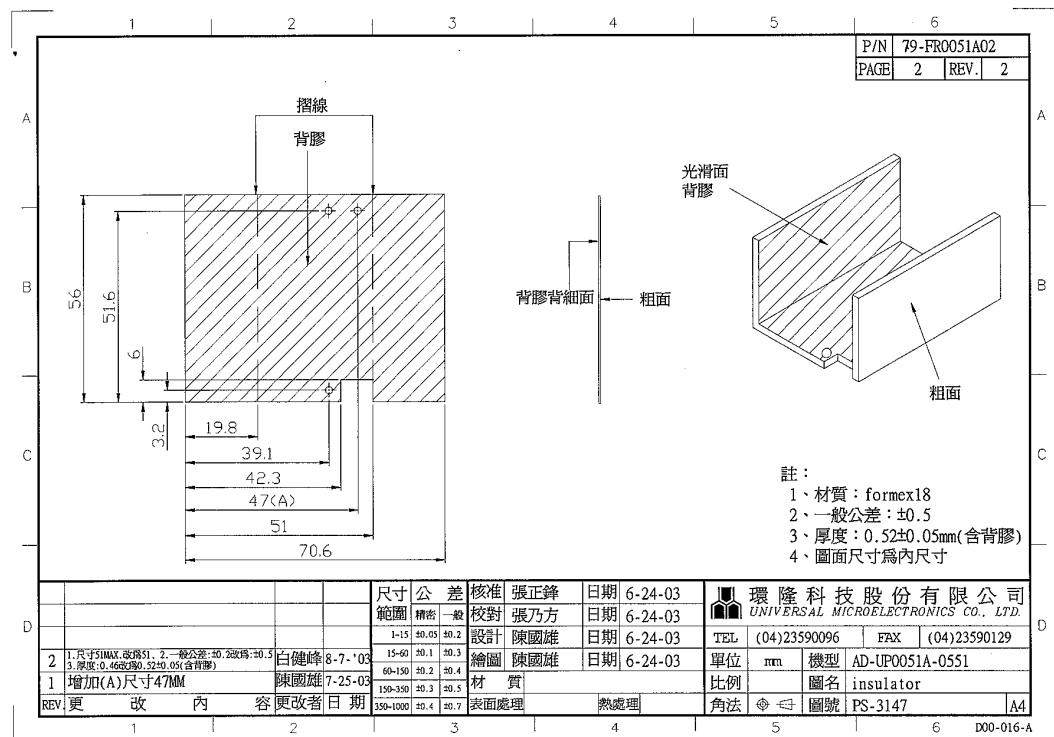
\*Specification Subject to Change Without Notice

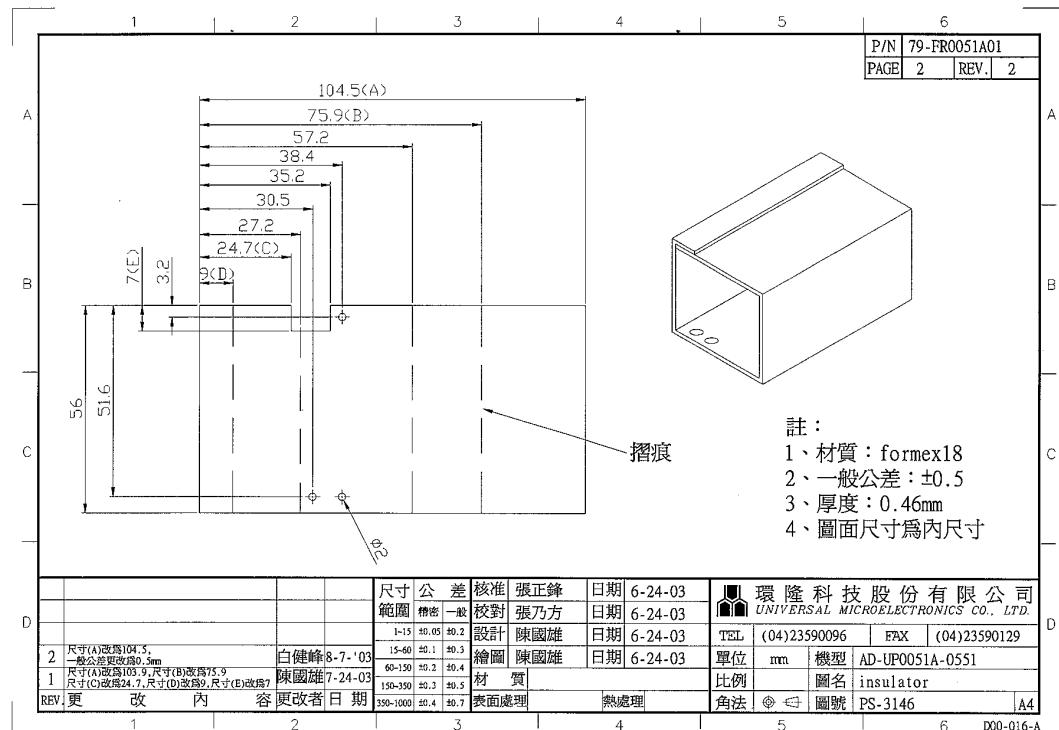
P/N:	DIMENSIONS IN MM	Unless otherwise specified Dim. Tolerances are: .xx ±0.3 .xxx ±0.127	REV: B	DRWN:	DATE:03-07-05
953454-0010	SCALE: NONE		PAGE:1/1	APPD:	DATE:

LANKom Electronics Co., Ltd. • TEL: 886-2-6606-9777 • FAX: 886-2-6606-9555 • E-mail: sales@lankom.com.tw









**Enclosure**  
**Schematics + PWB**

(Total 8 Pages including this Cover Page)

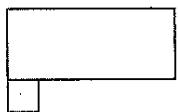
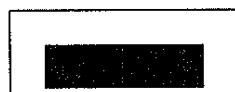
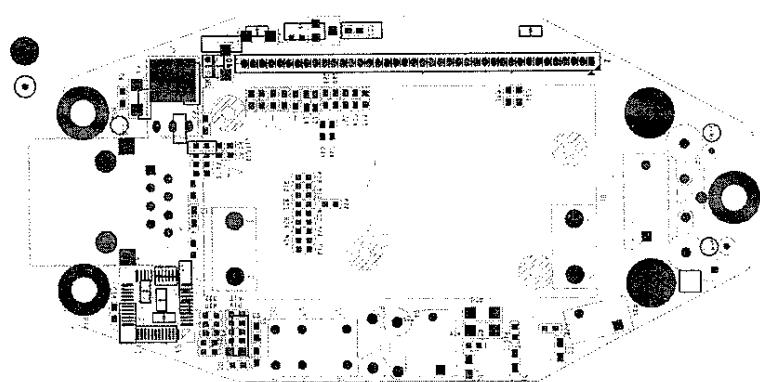
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5-01	PWB layout

Issue Date: 2003-09-25

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Report Reference #

E203413-A17-CB-1

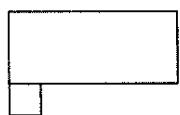
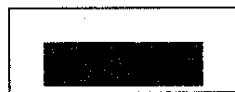
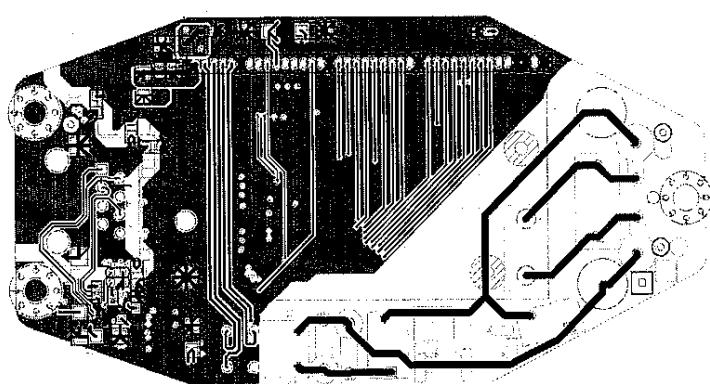


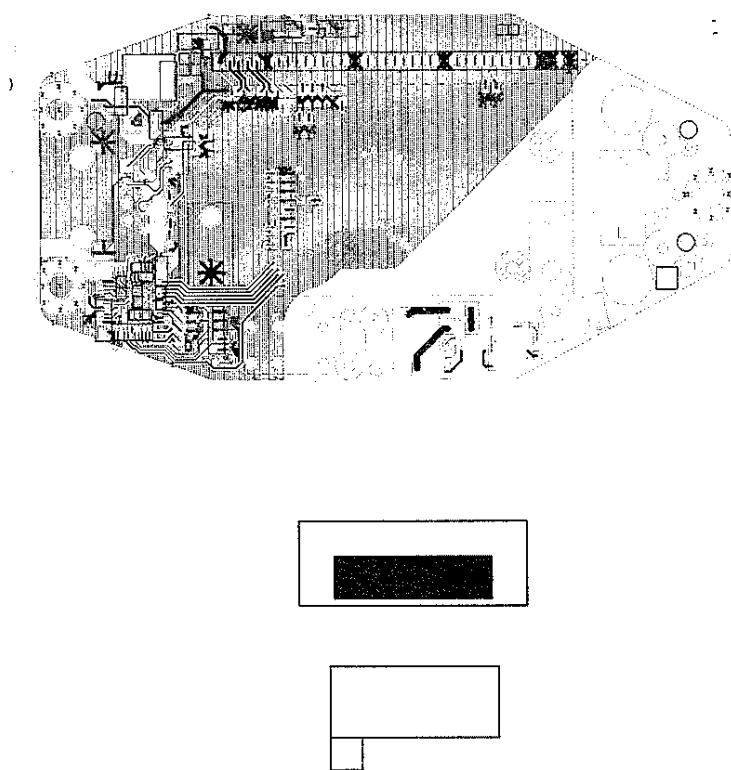
Issue Date: 2003-09-25

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Report Reference #

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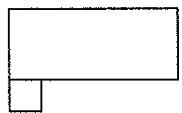
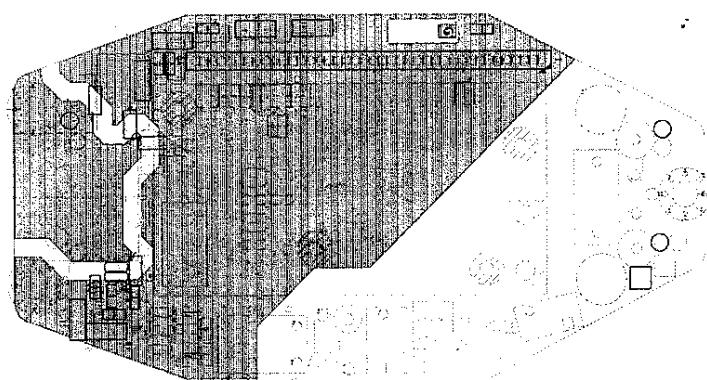


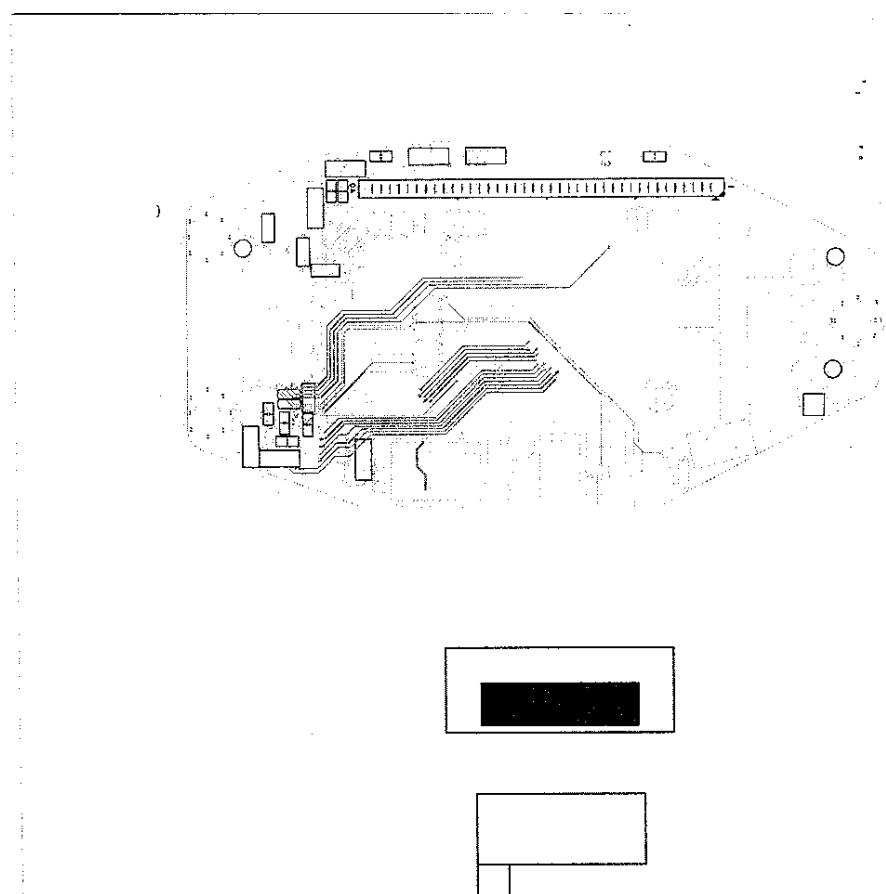
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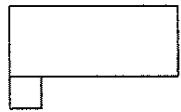
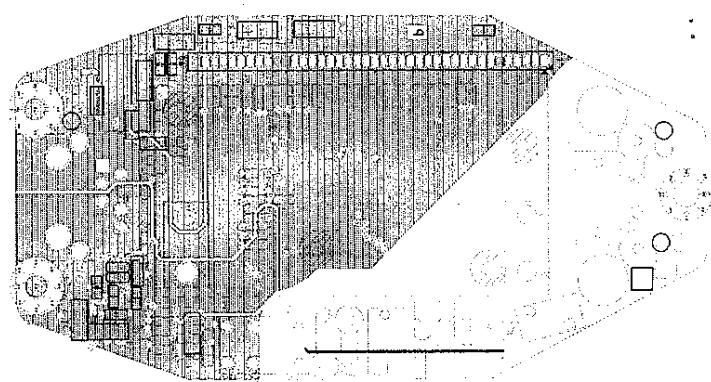
Page 5

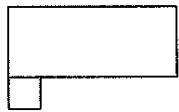
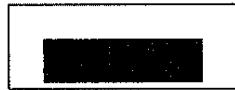
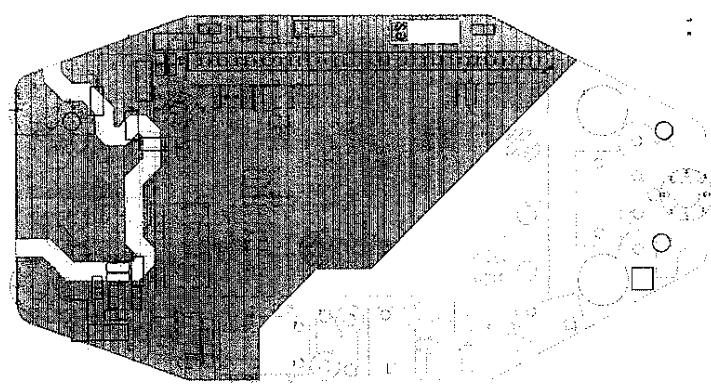
Report Reference #

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**Enclosure**  
**Miscellaneous**

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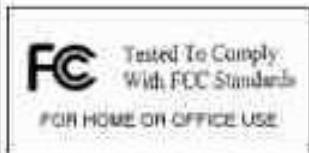
Supplement Id	Description
7-01	Label



**Home Plug Device**

**Model No. : MS-6821**

**Input Rating : 100-240 Vdc, 100 mA, 47-63 Hz**



E203413  
8G50  
I.T.E.